5.20 SPICES (R)

RESIDUE AND ANALYTICAL ASPECTS

Thailand submitted residue data obtained from 407 spice samples collected within a targeted monitoring programme carried out during 2005–2008.

Methods of analysis

The samples were analysed in two accredited laboratories applying either multi-residue methods based on acetone/dichloromethane/sodium chloride water solution extraction and partition and GC-ECD, GC FPD or HPLC detection after post-column derivatization, or using the QUECHER method with HPLC-UV or HPLC-MSD detection. The recoveries reported were comparable, but the LOQ values were substantially higher in 2007–2008 than the earlier years.

No information was provided on the storage conditions and duration between sampling and analyses.

The residues and metabolites analysed are in accord with the residue definitions recommended by the JMPR.

Results of monitoring programmes

The monitoring programme included root or rhizome spices (ginger, turmeric root, kra-chai root and galangal rhizomes), fruit or berry spices (pepper - black and white) and 38 pesticides which were commonly used and where residues were occasionally found in fruits, vegetables, herbs and spice commodities in Thailand. The LOQ values obtained during method validation were often higher than the residue concentrations determined in the samples.

None of the samples contained detectable residues of the following pesticides which had been evaluated by the JMPR: aldicarb, bifenthrin, carbendazim, carbosulfan, cyfluthrin, cyhalothrin, dichlorvos, diazinon, dimethoate, fenitrothion, fenvalerate, malathion, methidathion, methiocarb, omethoate, oxamyl, permethrin, phosalone, pirimiphos-methyl, profenofos and triazophos.

Dicrotophos, fenobucarb, isoprocarb, pirimiphos-ethyl, promecarb and prothiofos residues were also looked for but the samples analysed did not contain detectable residues. As these compounds have not been evaluated by the JMPR, maximum residue levels ccould not be estimated.

Detectable residues were found in the following commodity pesticide combinations:

- Kra-chai root – captan: < 0.05 (43) and 0.29 mg/kg;
- Galangal root – deltamethrin: < 0.05 (71), 0.18, 0.33 mg/kg
- Turmeric root – methomyl: < 0.1 (42), 0.69, 0.94 and 1.47 mg/kg
- Pepper, black and white – carbaryl: 0.09, < 0.1 (120), 0.14, 0.17, 0.35, 0.52, and 0.78 mg/kg
- Pepper, black and white – carbendazim: < 0.1 (122), 0.01, 0.01, 0.01 and 0.02 mg/kg
- Pepper, black and white – chlorpyrifos: 0.02, 0.02, 0.04, < 0.07 (121), 0.08, and 0.55 mg/kg
- Pepper, black and white – cypermethrin: 0.03, < 0.03 (117), 0.04, 0.05 (3), 0.07, 0.17, 0.13, and 0.43 mg/kg
- Pepper, black – ethion: < 0.02 (63) and 0.05 mg/kg

The Meeting noted that the number of samples analysed for captan in kra-chai and for methomyl in turmeric root did not meet the minimum sample size requirement of 58 (JMPR Manual

2nd ed. Section 6.11.1 page 107), therefore no recommendation could be made for these combinations.

Taking into account the number of residue data enabled the estimation of maximum residue levels covering the 95 – < 98% of the potentially present residues only, the Meeting included also the highest residue value in the estimated maximum residue level.

For fruit or berry and root and rhizome subgroups there are CXLs indicated in brackets, respectively, for chorpyrifos (1; 1 mg/kg), cypermethrin (0.1; 0.2 mg/kg), dichlorfos (0.1; 0.1 mg/kg), diazinon (0.1; 0.5 mg/kg), dimethoate (0.5; 0.1 mg/kg), ethion (5; 0.3 mg/kg), fenitrothion (1; 0.1 mg/kg), malathion (1; 0.5 mg/kg), permethrin (0.05*; 0.05* mg/kg), phosalone (2; 3 mg/kg) and pirimophos-methyl (-; 0.5 mg/kg) which cover the residues found in the Thai monitoring programme. These CXLs were confirmed by the present Meeting

For cypermethrin the Meeting estimated, for the fruit and berry subgroup a maximum residue level, median residue and HR of 0.5 mg/kg, 0.05 mg/kg and 0.43 mg/kg, respectively, and withdrew its previous recommendation of 0.1 mg/kg for the maximum residue level.

On the basis of the monitoring data, the Meeting concluded that the residue concentrations listed below were suitable for establishing MRLs and for assessing IEDIs and IESTIs.

Maximum, HR and STMR residue values recommended for fruit or berry and root and rhizome spices.

Codex Number	Commodity	Pesticide	Maximum residue level (mg/kg)		Median residue mg/kg	HR mg/kg
			New	Previous		
028B	Fruit or berry	Carbaryl	0.8		0.1	0.78
		Carbendazim	0.1		0.1	0.1
		Cypermethrin	0.5	0.1	0.03	0.43
0.28D	Root and rhizome	Deltamethrin	0.5		0.05	0.33

Taking into account that sufficient number of random samples were analysed and no detectable residue was found in any of the samples, the Meeting estimated maximum residue median and high levels in root and rhizome and fruit or berry spice groups at the reported highest LOQ values shown in the table below:

Maximum, median and high residue values [mg/kg] based on LOQ of pesticides

	028D Root and rhizome spices	028B Fruit and berry
Aldicarb	0.02	0.07
Bifenthrin	0.05	0.03
Captan	0.05	-
Carbaryl	0.1	
Carbendazim	0.1	
Carbosulfan	0.1	0.07
Cyfluthrin	0.05	0.03
Cyhalothrin	0.05	0.03
Deltamethrin		0.03
Fenvalerate	0.05	0.03
Methidathion	0.05	0.02
Methiocarb	0.1	0.07
Methomyl		0.07
Omethoate	0.05	0.02
Oxamyl	0.05	0.07
Profenofos	0.05	0.07
Triazophos	0.1	0.07

DIETARY RISK ASSESSMENT

The Meeting concluded that, it is unlikely that the dietary intake estimated by previous meetings would be markedly affected by the consumption of food containing spices considered by the present Meeting.